

## Science Excellence Initiative

			FY 2007			Change From 2006 (+/-)
			Fixed Costs & Related Changes (+/-)	Program Changes (+/-)	Budget Request	
<b>Science Excellence Initiative</b>		<b>FY 2005 Actual</b>	<b>FY 2006 Enacted</b>			
Science Excellence \$(000)			493		493	
FTE			2		2	
*Highly Pathogenic Avian Influenza Funding \$(000)			7,398		7,398	
FTE			30		30	
<b>Total, Science Excellence Initiative \$(000)</b>			<b>7,891</b>		<b>7,891</b>	
FTE			<b>32</b>		<b>32</b>	

\*The Avian Flu funds and FTE for FY 2006 and FY 2007 will be managed separately from the Science Excellence Initiative. Funds and FTE will be utilized by regional program managers.

### Program Overview

Scientific excellence continues to be the foundation of the Service's mission success. It empowers employees to ensure that fish, wildlife and their habitats are protected and managed effectively and efficiently, and that they remain available for public use and enjoyment. The Science Excellence Initiative (SEI) provides the executive leadership needed to position the Service in the near-term and far-term (i.e. 2020 and beyond) to meet the many science challenges inherent in its complex mission.

In July 2005, the Homeland Security Council's Biodefense Policy Coordination Committee on Avian Influenza and Pandemic Flu Preparedness tasked the Departments of Agriculture and the Interior with preparing and implementing a strategy for surveillance and early detection of Asian H5N1 virus in wild migratory birds in the United States. . The Committee recognized that the Fish and Wildlife Service is especially well-suited for these tasks because of its unique responsibilities for migratory birds; its special expertise in the ecology, movement and behavior of these birds; and its history of monitoring bird populations and collecting biological data on continental scales. The Committee also recognized that the U.S. Geological Survey has assets and capabilities that complement those of the Service, especially the Survey's expertise in wildlife disease and in avian biology and ecology, its long history of conducting research on wild birds and their migrations, and its network of research centers and scientists across the country.

The Service and USGS have worked together and with other federal agencies and the International Association of Fish and Wildlife Agencies (IAFWA) to develop a detailed strategy for surveillance for the Asian H5N1 virus and have responsibility for 1) prioritizing surveillance of live wild migratory birds, 2) investigating bird morbidity/mortality events, and 3) prioritizing surveillance of hunter-killed birds. These activities are being carried out by several programs in the Service and Survey, most notably by National Wildlife Refuge System and the Migratory Bird Management program in the Service, and by the Biological Resources Discipline in USGS. Because surveillance needs may change quickly as our understanding of the ecology of the H5N1 influenza virus and the risk to wildlife, agriculture and public health evolve, both bureaus are prepared to rapidly realign funding and staffing to address emerging priorities. Because of its broad responsibilities for science excellence and its close working relationship with USGS and other science organizations, the Office of the Science Advisor in the Service was assigned lead responsibility for the three tasks identified above. As a result of this decision, the Service

has chosen to describe its avian influenza activities and budget needs under the Science Excellence Initiative program.

During FY 2006, the funds provided to the Service will be allocated to the Service programs as appropriate. This funding will be allocated to the regions to enable field level staff to undertake activities related to the prevention and detection of HPAI as described in the narrative below.

#### Use of Cost and Performance Information

The Science Excellence Initiative (SEI) contributes to the Service's and Department's performance by *Advancing Knowledge through Scientific Leadership and Informing Decisions through Science* (End Outcome Goal 2 of the *Serving Communities* Mission Area), and by ensuring that the *Workforce Has Job-related Knowledge and Skill Necessary to Accomplish Organizational Goals*, which is End Outcome Goal 1 of the *Management Excellence* Goal.

- The SEI completed a detailed survey in FY2005 to determine the status of the Service's science capacity. The survey, which was conducted in collaboration with specialists in science policy and science assessment at USGS, helped the Office of the Science Advisor gain important insights into the current research interests and needs of Service scientists.
- The response rate has exceeded 65% (more than 1200 employees), which reflects the high level of interest among Service biologists in the Service's science foundation and in our ongoing efforts to provide additional science infrastructure and capacity.
- When asked if they have access to science equipment, they need to perform their jobs, the 1200 respondents rated the adequacy of their equipment as 3.51, on a scale of 1 to 5, with 5 being the highest score. The SEI will be exploring options in FY2006 to help meet operational needs for necessary science capacity.
- The program plans to use similar surveys and evaluations in FY2006 to identify other important science needs of the Service, particularly with respect to the three key goals of the Science Excellence Initiative. These plans are discussed in the FY2006 Planned Program Performance section.

Program Element		FY 2005 Actual	FY 2006 Enacted	FY 2007			Change From 2006 (+/-)
				Fixed Costs & Related Changes (+/-)	Program Changes (+/-)	Budget Request	
Science Excellence	\$(000)		493			493	
	FTE		2			2	

### Program Overview

The Science Excellence Initiative strives to achieve three key goals, specifically to work closely with the Service Directorate to:

**Goal 1:** Maintain the fundamental competencies of the Service's scientific staff and the fundamental capacities of its science facilities;

**Goal 2:** Demonstrate leadership and excellence in following appropriate scientific practices and procedures in its work; and

**Goal 3:** Foster productive relationships and interactions among its scientists, scientists elsewhere, and with resource managers.

These three goals fit efficiently within the broader strategic planning frameworks used by the Service and the Department. The SEI indirectly supports three DOI Mission Goals: 1) Resource Protection Goal 1.1 [healthy watersheds and landscapes], 2) Resource Protection Goal 1.2 [sustainable biological communities], and 3) Recreation [Goal 3.1]. Because the SEI enhances and sustains the performance of biologists and other scientists in all Service programs and because the performance of those employees is inextricably linked to their science knowledge and science skills, the best way of describing the overall contribution of the SEI to the Department's strategic plan and the Service's conservation mission is contained in the *Serving Communities* Mission Area, and under the *DOI Management Excellence* Goal.

To accomplish these goals, the SEI provides executive leadership in helping the Service engage in activities that involve four types of strategies:

**Strategy 1:** Assess the Service's scientific foundations

**Strategy 2:** Build additional science infrastructure

**Strategy 3:** Build key partnerships

**Strategy 4:** Conduct key special projects

These proposed strategies will:

- Provide employees with timely access to scientific information and state-of-the-art scientific tools;
- Meet Service needs and employee needs for scientific research and technical assistance;
- Meet Service needs and employee needs for peer interaction and collaboration among scientists;
- Facilitate employee membership, participation and leadership in professional societies and scientific organizations;

- Enhance and expand relationships between the Service and professional societies and with scientific organizations;
- Identify and promote science-based conservation strategies for habitat and population management;
- Maintain and expand the skills of employees in understanding, analyzing, applying and communicating complex scientific concepts, information and tools; and
- Ensure that employees are aware of practices and procedures that are appropriate to use when engaged in science activities, such as conducting research, seeking peer review, and using, publishing and disseminating scientific information.
- Ensure that employees have access to and are aware of standards and protocols that are appropriate when collecting, maintaining, sharing and disseminating scientific data and other scientific information.

### **2007 Program Performance Estimates**

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The Science Excellence Initiative will continue to focus on the three goals and the four-implementation strategies previously identified above. Focus areas, performance goals and performance targets will largely remain the same as those performed in FY2006. Complete discussions of objective goals and strategies appear in the 2006 Planned Program Performance section. The following discussion below is our expected FY2007 performance, as compared to FY2006.

#### ***Strategy 1: Assess FWS's scientific foundations***

This strategy will continue to be vital to the success of the Service's science activities as a whole. By assessing the Service's science foundations and developing baseline measures of the status of various components of its science foundations, the Service will be able to direct its modest science resources to improving components that will contribute most to meeting performance objectives, goals and targets in the Service's operational and strategic plans.

In FY2007, the Office of the Science Advisor will work with the Service Directorate to narrow gaps that exist in the Service's science competencies, capacities, practices, relationships and interactions. Efforts will be guided by results of systematic assessments that will begin in FY2006 and be completed during the first half of FY2007. Information gathered in FY2006 and FY2007 will enable Service leadership to work with DOI, OMB and Congress to narrow specific gaps that are most consequential to the Service's overall readiness as a science-based organization and to its mission success.

The Office of the Science Advisor will also continue to work closely with the Science Committee and Directorate Oversight Council to provide the Directorate recommendations that will enable the Service to actively promote and manage publication of scientific information and dissemination of results of its scientific investigations. These activities will be coordinated closely with the National Data Steward and integrated with activities involving the Data Quality Act, OMB's Peer Review Bulletin, and DOI's and OMB's expectations for scientific conduct and for data stewardship.

In addition, the Office of the Science Advisor will work with The Wildlife Society (TWS) to lead discussions with the Service Directorate about ways professional societies and the Service can collaborate to share scientific information, promote professional development, and encourage Service members and participation in professional societies. Discussions will be informed by findings and recommendations that will be produced from a yearlong evaluation that will be conducted jointly by the Service and TWS in FY2006 using an Intergovernmental Personnel Act (IPA) position.

#### ***Strategy 2: Build additional science infrastructure***

The Office of the Science Advisor will continue to work with the Service Directorate, Science Committee, Directorate Oversight Council and external science partners, particularly USGS, to develop and maintain the science infrastructure it needs to be an effective science-based organization. Attention will focus on maintaining the additional infrastructure added in FY2006 to: 1) meet expectations and directives from Congress, OMB, and DOI concerning the Data Quality Act, peer review, scientific conduct and data stewardship; and 2) enhance the Service's scientific competencies, capacities, practices, relationships and interactions. Much of these activities will continue to fall under the purview of the Science Committee, Directorate Oversight Council and National Data Steward.

In addition, the Office of the Science Advisor will continue to work closely with the National Conservation Training Center to ensure that the two communities of practice established in FY 2006 prove effective in assisting the Service in: 1) developing and maintaining subject matter expertise and mastery among its employee; 2) sharing knowledge and expertise between Service scientists and Service offices; and 3) developing an overall Service approach to knowledge preservation and knowledge management.

Similarly, the Office of the Science Advisor will continue to work closely with USGS to ensure that the adaptive management consultancies established with additional appropriations in FY2006 prove effective in: 1) providing the Service with additional expertise in adaptive management beyond levels that currently reside in the Service; 2) assisting the Service with managing trust species, such as waterfowl, wetlands and other aquatic habitats, and interjurisdictional fishes; and 3) assisting USGS and Service scientists in focusing their research and investigations on the most important management issues.

### **Strategy 3: Build key partnerships**

Building key partnerships will continue to be essential to the success of the Office of the Science Advisor and to the overall ability of the Service to maintain its leadership as a science-based conservation organization and to accomplish its mission. Attention will focus on maintaining existing science partnerships that have proven productive and beneficial, like those with USGS, the International Association of Fish and Wildlife Agencies and their member states, The Wildlife Society, American Fisheries Society, NatureServe, Ecological Society of America, American Museum of Natural History, American Zoological Association and other federal agencies, especially those in the Departments of Defense, Commerce and Agriculture.

Special efforts will be made to solidify and expand partnerships with other agencies and professional organizations whose missions and capabilities complement those of the Service, like the Forest Service, Environmental Protection Agency, and Department of Agriculture. Based on its experiences in FY2005, the Service believes that it can benefit from the special expertise of these partners in areas like earth observation imagery and remote sensing, Integrative Graduate Education and Research Traineeship Programs (IGERTs), and the Asian N5H1 virus and avian influenza.

### **Strategy 4: Conduct key special projects**

Special projects will continue to provide the Office of the Science Advisor and the Service as a whole with opportunities to engage in short-term (1-5 years) activities that are especially important in: 1) coalescing, synthesizing and developing new ideas and new approaches that hold promise for improving the Service's science foundations; 2) demonstrating the effectiveness and attractiveness of new ideas and new approaches that have been used successfully in localized parts of the Service or on broader scales outside the Service; and 3) assembling the expertise and personnel necessary to address an especially important conservation issue or challenge. Examples of these kinds of special projects include, respectively: 1) *the Future Challenges Initiative* and associated synthesis report that will recommend ways the Service and USGS can better position themselves to address the adverse effects of major environmental challenges on fish, wildlife and their habitats; 2) the National Ecological Assessment

Team [NEAT] and the team's development of its *Strategic Habitat Conservation* report and recommendations; 3) the role of the Service's Liaison to USGS in spearheading the Service's response to the Asian H5N1 virus and in coordinating activities across the Service and with USGS and DOI.

### **2006 Program Performance Estimates**

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The Science Excellence Initiative will continue to focus on its three goals and four implementation strategies in FY2006. Noteworthy activities are highlighted below for each of the four implementation strategies.

#### **Strategy 1: Assess FWS's scientific foundations**

The Service will use the results obtained from the joint FWS-USGS assessment of Service science capacity to help it meet each of the three Science Excellence goals identified in the Program Overview section. Specifically, the Service plans to gather detailed information about specific gaps that exist in its science competencies, capacities, practices, relationships and interactions, and then prioritize these needs and determine how best to close those gaps. The Science Advisor anticipates working with the Service Science Committee and the Directorate Oversight Council, and most likely with USGS's Policy Analysis and Science Assistance Branch at Fort Collins, Colorado, to involve all levels of the Service in these evaluations. This emphasis on identifying and then narrowing gaps complements several operational goals and critical success factors of the National Conservation Training Center, specifically NCTC's efforts to reduce competency gaps in the knowledge, skills and abilities of Service personnel.

The Office of the Science Advisor will also work closely with the Science Committee and Directorate Oversight Council to ensure the Service maintains sufficient scientific foundations. Specifically, the Science Advisor, Committee and Council will formulate recommendations for the Director's consideration concerning: 1) the kinds of policies, processes and other infrastructural components the Service needs to encourage its scientists to publish and disseminate the results of their scientific investigations and management activities; and 2) the kinds of review processes and approval processes the Service needs to expedite publication of important scientific information. The National Data Steward will play an important role in integrating these activities with similar concerns that stem from requirements of the Data Quality Act, OMB's Peer Review Bulletin, and OMB's and DOI's expectations concerning data stewardship in general.

In addition, the Office of the Science Advisor and his counterparts at USGS will work with The Wildlife Society to assess how professional societies, particularly The Wildlife Society, the Service, and USGS can benefit from greater membership and participation of Service scientists and managers in professional societies. Employees will be surveyed to identify: 1) ways of encouraging and facilitating membership and participation, and for encouraging publication, presentation and dissemination of scientific studies; and 2) ways professional societies can assist Service scientists and managers with professional development, training and possibly with certification.

Information generated from these three critically important activities will be channeled into planning and budgeting processes within Service programs to create additional organizational capacity to generate and disseminate scientific information that the Service and its partners need to fulfill their conservation missions. Results of these activities will also inform Regional executives and program executives and enable them to work together within and across Regions and programs to narrow the science gaps that affect Service operations most significantly. In addition, the information will enable the Service and USGS to use their science capabilities more effectively and efficiently by developing complementary capabilities.

Activities in each of these work areas will yield information that will assist the Service in measuring performance and operational needs, and in integrating performance and budget. The activities will also assist the Service with strategic planning, priority setting, employee development and management, budget formulation, and most importantly, management and conservation of fish and wildlife on-the-ground.

**Strategy 2: Build additional science infrastructure**

The Service plans to expand its science infrastructure in FY2006 to satisfy increased expectations and directives from Congress, OMB, and DOI, and to enhance the Service's science competencies, capacities, practices, relationships and interactions. Two specific actions, namely creation of a National Data Steward position and greater reliance on the Service's Science Committee and the Directorate Oversight Council, were described in the discussion associated with Strategy 1 above and in the text box at the beginning of the Program Overview section.

In addition, the Office of the Science Advisor and the National Conservation Training Center will collaborate to establish or "stand up" two communities of practice in FY2006, using \$143,000 appropriated for this purpose. These efforts will flow from consultations and careful planning conducted in FY2005, as described in detail later under Strategy 2 in the 2005 Program Performance Accomplishments section. Attention will focus initially on standing up a community of practice among Service biologists involved in structured decision support. Preparations will be completed to: 1) identify practitioners and subject matter experts and masters; 2) sanction the community as an officially-approved organizational entity; 3) encourage and empower members of the community to actively participate in it; 4) support the community with special IT systems and management assistance that will facilitate information exchanges and development of subject matter expertise and mastery; and 5) empower the community to select leaders and develop plans to share information, enhance subject expertise and mastery, and recruit additional Service employees to the community. Information gained from these processes will be used later in FY2006 to stand up a second community of practice among practitioners, experts and masters in a second subject yet to be decided.

In addition, the Office of the Science Advisor will work with USGS to establish consultancies that will expand the capacity of both bureaus to apply adaptive management principles to critically important fish and wildlife issues, using \$150,000 that Congress specifically appropriated for this purpose. Consultancies will enable Service scientists and managers to access specialized scientific expertise that resides with organizational units of the Biological Resources Division of USGS, specifically at its Research Centers and its Cooperative Research Units, to complement or supplement scientific expertise and management expertise that resides within the Service. Attention will focus on linking experts in adaptive resource management to address complex resource challenges, particularly ones that involve trust species, such as migratory birds, wetlands, interjurisdictional fishes and threatened and endangered species. The Service intends to use the funds appropriated by Congress to establish one consultancy with the Patuxent Wildlife Research Center to assist the Service and its conservation partners in managing migratory waterfowl, upland game birds and song birds. Other scientists with special expertise in adaptive management will assist Regions 3 and 5 in their Adaptive Management Partnership project. In addition, the Service is exploring ways of establishing other consultancies to assist it and its conservation partners in restoring and creating wetlands, and restoring and recovering aquatic species, particularly interjurisdictional fishes. Priority is likely to be given to areas and resources devastated by hurricanes and other natural disasters that befell large areas of the United States in 2005, particularly along the Gulf of Mexico.

**Strategy 3: Build key partnerships**

The Office of the Science Advisor will continue to exercise leadership and work with the Service Directorate to build partnerships that strengthen and expand the Service's science capabilities and science

infrastructure. Partnerships will help the Service implement specific actions in: 1) the *Future Challenges Project* national synthesis report to be completed early in 2006; 2) the report that resulted from the joint FWS/USGS project that assessed the scientific capabilities and needs of the Service; 3) priorities of the new Service Director, including wetlands, aquatic habitats and state conservation plans; and 4) addressing the needs (e.g., climate change, conservation genetics, remote sensing) of the conservation community at large.

Emphasis will also be placed on working with The Wildlife Society to complete the assessment described under Strategy 1 immediately above. This assessment will shed important light on ways the activities and resources of professional societies can complement those of the Service, and *vice versa*.

The Office of the Science Advisor also plans on exploring opportunities to examine science needs identified in state comprehensive fish and wildlife management plans to identify needs common to several states and to the states and the Service. Identification of common needs and gaps in science competence, capacity, processes, relationships and interactions could enable the Service and its partners to determine how best to fill those gaps and address shared conservation goals and needs.

In addition, the Service will continue to use its partnerships with USGS, particularly with the Cooperative Research Units and Research Centers, and with the International Association of Fish and Wildlife Agencies, The Wildlife Society, American Fisheries Society, and Ecological Society of America to develop, access, and disseminate the science information and science tools needed to address regional and national resource challenges. This will include expanding science partnerships with the American Museum of Natural History, American Zoological Association, NatureServe and the Department of Defense to help meet pressing resource needs and issues. It will also include expanding the fruitful partnership among that Service, USGS and NASA that began in FY2005, as discussed in more detail under Strategy 3 in the 2005 Program Performance Accomplishments section, to apply earth observation imagery, sophisticated remote sensing tools, and associated modeling techniques to assist the Service and USGS in addressing high-priority resource issues, like the effects of reduced polar ice on polar bears and walrus, and to assist in recovering critically imperiled species, like the Ivory-billed Woodpecker in the Lower Mississippi Valley.

#### **Strategy 4: Conduct special projects**

The Service, in collaboration with USGS, will complete the second phase of their *Future Challenges Project* in FY2006. They will produce a report that will synthesize the results of four regional workshops, as discussed under Strategy 4 in the 2005 Program Performance Accomplishments section. The report will identify priority actions that the bureaus can take to make them more effective in dealing with the resource consequences of global climate change, bioengineering and biotechnology, increased water uses, and invasive species.

The Service, in an effort that will be led by the Office of the Science Advisor and will be coordinated carefully with USGS, will play an important role in our government's efforts to implement an early detection program for the Asian H5N1 virus in wild birds, as part of an international effort to combat avian influenza in humans. Former Director Steve Williams assigned management responsibility for the Service's avian influenza activities to the Office of the Science Advisor. His decision was later reaffirmed by his successor, current Director Dale Hall, who felt the Office of the Science Advisor (OSA) offered three distinct advantages over other management options:

- 1) Because OSA is part of the Directors Office and because the Science Advisor reports regularly and directly to the Director, placing responsibility for avian influenza in OSA provides the Service with maximum flexibility to respond appropriately to the Asian H5N1 virus and potentially to disease(s) that could develop in birds and other species, including humans. While Service efforts are currently



focused on early detection of the virus in wild birds, primarily in Alaska, future efforts could involve other activities, species, locations and partners, particularly if the virus is detected in wild birds or captive birds, if it spreads to other species, or if species exhibit clinical signs of disease. Should any of these circumstances occur, the Directors Office will require maximum flexibility to use resources at its disposal to respond as directed by the Administration.

- 2) The Office of the Science Advisor provides an independent and objective capacity to develop, coordinate and manage a Service response that could involve many programs. While current early detection activities are being implemented largely by the Migratory Bird program and National Wildlife Refuge System, future activities could involve other Service programs, particularly if the virus is detected and/or disease ensues. Other Service programs would likely include Law Enforcement, International Affairs, Federal Assistance and perhaps Fisheries and Habitat Conservation. Because of this potential for broad cross-program involvement and because of the potential for the Service's response to involve both its Regional Directors and its Assistant Directors, the Office of the Science Advisor provides a unique capacity to coordinate and manage internal efforts, as well as coordinate external activities involving other DOI bureaus, and other departments and bureaus.
- 3) Because the Service's early detection activities are being conducted in close partnership with the USGS and depend in large part on USGS's capabilities to assist the Service in designing and conducting monitoring programs, as well as in detecting the Asian H5N1 virus and clinical signs of disease, the Service and USGS benefit from former Director William's and Director Hall's decision to assign lead responsibility to the Office of the Science Advisor. The Science Advisor is directly responsible for the activities of the Service's Liaison to USGS. The Liaison is a senior executive who is housed at USGS's headquarters in Reston, Virginia, and who works with USGS's executive leadership team (ELT) and the Service's Directorate to ensure efficient and effective communication, coordination and partnership between the two bureaus. The Liaison is currently spending more than half his time on the Asian H5N1 virus, ensuring the two bureaus are unified in their approach and activities, and are contributing to the overall approach developed by the Administration.

In addition, the Office of the Science Advisor will work with USGS to help fund an adaptive management (AM) project involving National Wildlife Refuges in Regions 3 and 5, using \$200,000 that Congress appropriated for this demonstration project. The National Wildlife Refuge System and USGS will provide additional funding, bringing anticipated FY2006 expenditures for this project to \$1,650,000. This AM project will focus on wetland drawdowns and their effects on waterbirds, and on prescribed burning and its effects on vegetation and waterbirds. The Service and USGS will use information generated from this study to adjust refuge management plans and guide operational activities, as well as to design additional studies and monitoring programs that will further improve refuge operations in future years. This approach is a unique integration of biological research and monitoring with operational planning and management at multiple refuges across two Service regions to optimize species and habitat management and to integrate on-refuge management goals with larger landscape management goals.

In FY2006, the Office of the Science Advisor will continue to provide the executive leadership needed to ensure that USGS's Science Support Program (SSP) addresses the Service's highest priority research needs and produces results that meet the Service's science needs, nationally and regionally. The Science Advisor will also evaluate the Service's use of the *Fish and Wildlife Information Needs System* (FWINS) to ensure the system is performing well in tracking, managing and completing funded projects and that project deliverables are helping the Service meet its resource management responsibilities. In a parallel initiative, the Science Advisor will confer with the Service Directorate to determine their interests in exploring alternative ways of allocating and using SSP funds. Since the program's inception, funds have been divided equally among the Service's regions and applied to each region's priority needs. In

addition, the Service's Liaison to USGS will continue working with the executive leadership of USGS to help ensure that science partnerships and base research funds available to USGS are effective in addressing resource issues of greatest importance to the Service and conservation community as a whole. Attention will focus on working with USGS to expand the capabilities of both bureaus in adaptive resource management, resource monitoring and assessment, resource modeling, and decision-support systems.

Also, as explained in detail in the discussion of Strategy 4 in the 2005 Program Performance Accomplishments section, the Science Advisor will work with the National Ecological Assessment Team (NEAT) to prepare a final detailed report that will describe a national approach to eco-regional planning, conservation action and assessment. He will work with the team to present their findings and recommendations to the Directorate. If adopted, the NEAT's recommendations will significantly change how the Service engages in biological planning and biological assessments, and allocates its resources.

### **2005 Program Performance Estimates**

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The Service's Science Excellence Initiative focused on its three goals and four implementation strategies in FY2005, and enjoyed many impressive successes. Noteworthy accomplishments are summarized below for each of the four implementation strategies.

#### **Strategy 1: Assess FWS's scientific foundations**

Efforts focused on three important projects, the first of which was completing the assessment of Service science capacity that began in FY2004 with assistance from the U.S. Geological Survey. The full study is available online at <http://www.fort.usgs.gov/products/publications/21528/21528.pdf>.

The second important project to enhance the Service's capacity to assess its scientific foundations was to empower and enable the Service's Science Committee and a Directorate Oversight Council to help identify gaps and needs associated with each of the three key goals of the Science Excellence Initiative. This was particularly important to examine our scientists' core competencies and the core capacities of our scientific facilities and institutions. The Science Committee and Directorate Oversight Council met twice in FY2005 and formed subgroups to conduct assessments and develop recommendations that together will provide the Director with means for:

- 1) ensuring the Service has the necessary processes and infrastructure to encourage its scientists to publish and otherwise disseminate the results of their scientific investigations and management activities, and to ensure an orderly and efficient process of reviewing and approving material for publication;
- 2) ensuring the Service has the processes and infrastructure needed to comply with OMB's peer review bulletin and to promote peer review broadly within the Service;
- 3) stepping-down the Department's code of scientific conduct to Service scientists and for ensuring that Service scientists and managers know what the code requires and conform fully with it; and
- 4) ensuring that during its workforce planning processes the Service takes into consideration the fundamental competencies its workforce must have and the fundamental capacities its science facilities must exhibit to maximize the effectiveness of its workforce.

#### **Strategy 2: Build additional science infrastructure**

Efforts in FY2005 focused on using the newly-established 13-person Service Science Committee and 5-person Directorate Oversight Council to address several high-priority science needs identified by Service

leadership. Director Williams charged the Committee and Council with developing clear policies that tier-off DOI policies and explain the Secretary's and Director's expectations in regard to: 1) peer review, 2) Scientific code of conduct, and 3) preparation and dissemination of professional publications. In addressing these charges and in discussing other high-priority science needs, the Science Committee and Directorate Oversight Councils began to promote scientific competence and scientific excellence throughout the Service. The Committee and Council provide basic infrastructures through which experienced scientists and accomplished managers can work together in helping the Service Directorate maintain the scientific foundation on which the Service bases its fish and wildlife management plans and management decisions. As discussed in the previous section, the Committee is using the talents and knowledge of its members and is reaching out to countless other scientists in the Service to identify and address the Service's most pressing science issues, needs and opportunities.

During the latter half of FY2005, the Office of the Science Advisor, with leadership and assistance from its National Conservation Training Center (NCTC), took important initial steps to establish communities of practice that will facilitate sharing and management of important scientific knowledge and will promote technical competency and subject-matter mastery among Service scientists. Consultation with internationally-recognized experts in knowledge management from IBM Corporation helped senior Service managers in the Office of the Science Advisor and at NCTC identify steps the Service needed to take to "stand-up" and fledge communities of practice. Subsequent discussions among these Service managers lead to the decision that the Service would begin by standing-up a community of practice among Service biologists involved in structured decision support. These managers also agreed to sponsor a workshop in June 2005 to bring together Service experts in structured decision support, as part of an overall Service effort to promote use of decision support systems and to assist in standing-up the community of practice. In addition, these managers agreed to stand-up at least one other community of practice, possibly among the Service's conservation geneticists or its toxicologists. Late in FY2005, Directorate member and their deputies expressed keen interest in standing-up other communities of practice, particularly among professionals engaged in workforce engineering and outsourcing, and in fish passage and fishway engineering. Because of leadership provided by the Office of the Science Advisor and by NCTC, the Service took major strides forward in FY2005 in building important infrastructures to assist in managing and disseminating scientific knowledge and promoting mastery of scientific subjects, as well as several administrative subjects.

Also, the Science Advisor and National Research Coordinator continued to work closely with their counterparts in USGS to ensure that research funds available through USGS's Science Support Program (SSP) were directed to the highest-priority needs of the Service and generated information that could be readily applied to conservation issues. The Service implemented an automated tracking system, called the *Fish and Wildlife Information Needs* system or *FWIN*, to monitor progress on research projects funded with SSP appropriations.

### **Strategy 3: Build key partnerships**

The FWS Director, his Science Advisor and the Liaison to USGS continued to meet monthly with their counterparts in USGS, as well as with key non-government organizations, to reinvigorate old partnerships and create new ones. The partnership between the Directors and senior executives of the Service and USGS that began in FY2004 grew significantly and fostered an atmosphere of greater collaboration and congeniality between the employees of the two bureaus. As a result, interactions between managers and scientists within and between the bureaus increased significantly.

Additional science partnerships with The Wildlife Society (TWS) and International Association of Fish and Wildlife Agencies that came to fruition via formal memoranda of agreement in FY2004 enabled these NGOs and the Service to share science information and data more readily in FY2005. An Intergovernmental Personnel Act (IPA) position between the Service and TWS was established in the

final quarter of FY2005. The Service employee in this yearlong position will work closely with TWS and senior leaders in the Service and USGS to identify additional opportunities for all three organizations to benefit from increased membership and participation of federal scientists in the activities of professional societies and similar organizations.

The Service continued to expand relationships with Cooperative Research Units and Cooperative Ecosystem Study Units in FY2005. The Service is now a signatory to 21 CRUs (a 40% increase from FY2002) and 6 CESUs (more than a 100% increase from FY2002), providing the Service with additional mechanisms for commissioning mission-critical research and obtaining information needed by its operational managers. In addition, the Service continued to work closely with the American Museum of Natural History, American Zoological Association, NatureServe and the Department of Defense to exchange scientific information and identify specific ways employees at national, regional and field levels of these organizations can work together to conserve fish and wildlife more effectively.

An especially noteworthy partnership was established between the Service, USGS and the National Aeronautics and Space Administration (NASA). The bureaus agreed to share expertise, technology and information to improve conservation planning and assessment, and in particular, to conserve trust resources and imperiled species. Attention focused on facilitating recovery of Ivory-billed Woodpeckers in the Lower Mississippi Valley and helping scientists and resource managers understand how shrinking polar ice is affecting populations of polar bear and walrus in the Arctic. Preliminary plans were developed to apply earth observation imagery, remote sensing technology and associated modeling techniques in FY2006 to assist in conserving these species.

#### **Strategy 4: Conduct special projects**

In FY2005, the Office of the Science Advisor accepted lead responsibility within the Service for working with scientists and managers in the Service and USGS, and with other government agencies to develop and begin implementing a strategy for early detection of Asian H5N1 virus in wild birds. The Office of the Science Advisor, Migratory Bird program and National Wildlife Refuge System (NWRS) will participate in an extensive early detection program that will involve USGS in collecting wild birds and analyzing them for the Asian H5N1 virus and clinical signs of infection and disease.

Activities of the Migratory Bird program and NWRS will be integrated and, in some situations, indistinguishable on-the-ground. A general description of duties and responsibilities follows.

The Office of the Science Advisor, as described in greater detail in our response to the question above, will:

- Represent the Directors Office in internal and external activities involving the Asian H5N1 virus, which includes coordination and communication with the Department of the Interior, and representation and involvement with the Department of Homeland Security.
- Ensure that the Office of the Secretary is regularly informed of the results of early detection activities conducted jointly by FWS and USGS.
- Employ an adaptive framework in responding to needs associated with the Asian H5N1 virus, including:
  - Coordinating design of early detection activities within the Service and with USGS.
  - Securing funding and other resources needed to support early detection activities.
  - Helping Regional personnel implement early detection activities.
  - Reporting results of early detection activities and reassessing appropriateness of monitoring activities.
  - Advising the Director concerning needs for additional FWS capabilities and activities with respect to the Asian H5N1 virus.

The Migratory Bird Program will:

- Assist Regional Directors in administering the component of the early detection program that involves determining morbidity and mortality of wild birds, by:
  - Ensuring coordination and communication with affected and involved Tribes, and providing funding to support their involvement.
  - Ensuring coordination and communication with affected and involved states, and providing funding to support their involvement.
- Assist in capturing and sampling wild birds.
- Assist in examining hunter-taken birds and collecting samples for laboratory analysis.
- Assist in examining birds taken by subsistence hunters and in collecting samples for laboratory analysis.

The National Wildlife Refuge System will:

- Participate in looking for and collecting diseased and dead wild birds.
- Assist in capturing and sampling wild birds.
- Assist in examining hunter-taken birds and collecting samples for laboratory analysis.
- Assist in examining birds taken by subsistence hunters and in collecting samples for laboratory analysis.

Following-up on actions begun in FY2004, the FWS and USGS jointly sponsored symposia in Denver, Anchorage, Atlanta and Sacramento in FY2005, as part of the *Future Science Challenges Initiative*, to identify specific actions the bureaus could take to better anticipate and address major challenge to fish and wildlife managers over the next 15-20 years. Four challenges were addressed: global climate change, bioengineering and biotechnology, the effects of increased water use on fish and wildlife, and invasive species. The Service and Survey collaborated to produce four reports that identify the findings of each workshop and offer recommendations about management actions and science activities, particularly research, the bureaus could undertake to address these topics.

In addition, the Service and USGS collaborated to build an extensive database, called the *Fish and Wildlife Information Needs system* (FWIN), that houses information about the Service's highest-priority research needs, nationally and regionally.

Also in FY2005, the Science Advisor continued to lead a group of talented scientists and managers from the Service and USGS, called the National Ecological Assessment Team (NEAT), in developing a national approach to eco-regional planning, conservation action and assessment. The NEAT team prepared a detailed draft report that presents its approach for strategic habitat conservation. The NEAT report will be completed by mid-2006 and will be presented to the Service Directorate and USGS Executive Leadership Team for adoption as the preferred approach for effective biological planning and assessment, and for routine use in generating and applying biological information in fulfillment of the shared conservation missions of both bureaus.

## Program Performance Overview

<b>End Outcome Goal 4.2: Serving Communities.</b> Advance Knowledge Through Scientific Leadership
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<b>End Outcome Measures</b>	<b>2005 Plan</b>	<b>2005 Actual</b>	<b>Change from 2005 Plan</b>	<b>2006 Enacted</b>	<b>2006 Change from 2005 Actual</b>	<b>2007 Request</b>	<b>2007 Change from 2006</b>
Soundness of methodology, accuracy, and reliability of science, as measured by % of employees in scientific positions who publish scientific findings. <sup>1</sup> [Target = 25%]	n/a	11% 496/4435	n/a	12.1% <sup>2</sup> 537/4435	1.1% +(537-496)	12.1% 41/4435	0

<sup>1</sup> Baseline data for "FY2005 Actual" came from the *Web of Science*, as reported in a survey completed jointly by the Service and USGS in late in FY2005 (Citation: *Quantity, Quality, and Support for Research in the U.S. Fish and Wildlife Service: An Organizational Overview*. USGS Open-File Report 2005-391. 173 p.)

<sup>2</sup> The Service Science Committee and the Directorate Oversight Council are expected to recommend to the Service Directorate new policies and mechanisms that will encourage employees to publish more. As a result, we anticipate a net gain of 1.1% in the percentage of FWS employees who publish. Additional resources are required to meet the target of 25%.



Program Element		FY 2005 Actual	FY 2006 Enacted	FY 2007			Change From 2006 (+/-)
				Fixed Costs & Related Changes (+/-)	Program Changes (+/-)	Budget Request	
Science Excellence	\$(000)		493			493	
	FTE		2			2	

### Program Overview

The Science Excellence Initiative strives to achieve three key goals, specifically to work closely with the Service Directorate to:

**Goal 1:** Maintain the fundamental competencies of the Service's scientific staff and the fundamental capacities of its science facilities;

**Goal 2:** Demonstrate leadership and excellence in following appropriate scientific practices and procedures in its work; and

**Goal 3:** Foster productive relationships and interactions among its scientists, scientists elsewhere, and with resource managers.

These three goals fit efficiently within the broader strategic planning frameworks used by the Service and the Department. The SEI indirectly supports three DOI Mission Goals: 1) Resource Protection Goal 1.1 [healthy watersheds and landscapes], 2) Resource Protection Goal 1.2 [sustainable biological communities], and 3) Recreation [Goal 3.1]. Because the SEI enhances and sustains the performance of biologists and other scientists in all Service programs and because the performance of those employees is inextricably linked to their science knowledge and science skills, the best way of describing the overall contribution of the SEI to the Department's strategic plan and the Service's conservation mission is contained in the *Serving Communities* Mission Area, and under the DOI *Management Excellence* Goal.

To accomplish these goals, the SEI provides executive leadership in helping the Service engage in activities that involve four types of strategies:

**Strategy 1:** Assess the Service's scientific foundations

**Strategy 2:** Build additional science infrastructure

**Strategy 3:** Build key partnerships

**Strategy 4:** Conduct key special projects

These proposed strategies will:

- Provide employees with timely access to scientific information and state-of-the-art scientific tools;
- Meet Service needs and employee needs for scientific research and technical assistance;
- Meet Service needs and employee needs for peer interaction and collaboration among scientists;
- Facilitate employee membership, participation and leadership in professional societies and scientific organizations;



- Enhance and expand relationships between the Service and professional societies and with scientific organizations;
- Identify and promote science-based conservation strategies for habitat and population management;
- Maintain and expand the skills of employees in understanding, analyzing, applying and communicating complex scientific concepts, information and tools; and
- Ensure that employees are aware of practices and procedures that are appropriate to use when engaged in science activities, such as conducting research, seeking peer review, and using, publishing and disseminating scientific information.
- Ensure that employees have access to and are aware of standards and protocols that are appropriate when collecting, maintaining, sharing and disseminating scientific data and other scientific information.

### **2007 Program Performance Estimates**

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The Science Excellence Initiative will continue to focus on the three goals and the four-implementation strategies previously identified above. Focus areas, performance goals and performance targets will largely remain the same as those performed in FY2006. Complete discussions of objective goals and strategies appear in the 2006 Planned Program Performance section. The following discussion below is our expected FY2007 performance, as compared to FY2006.

#### ***Strategy 1: Assess FWS's scientific foundations***

This strategy will continue to be vital to the success of the Service's science activities as a whole. By assessing the Service's science foundations and developing baseline measures of the status of various components of its science foundations, the Service will be able to direct its modest science resources to improving components that will contribute most to meeting performance objectives, goals and targets in the Service's operational and strategic plans.

In FY2007, the Office of the Science Advisor will work with the Service Directorate to narrow gaps that exist in the Service's science competencies, capacities, practices, relationships and interactions. Efforts will be guided by results of systematic assessments that will begin in FY2006 and be completed during the first half of FY2007. Information gathered in FY2006 and FY2007 will enable Service leadership to work with DOI, OMB and Congress to narrow specific gaps that are most consequential to the Service's overall readiness as a science-based organization and to its mission success.

The Office of the Science Advisor will also continue to work closely with the Science Committee and Directorate Oversight Council to provide the Directorate recommendations that will enable the Service to actively promote and manage publication of scientific information and dissemination of results of its scientific investigations. These activities will be coordinated closely with the National Data Steward and integrated with activities involving the Data Quality Act, OMB's Peer Review Bulletin, and DOI's and OMB's expectations for scientific conduct and for data stewardship.

In addition, the Office of the Science Advisor will work with The Wildlife Society (TWS) to lead discussions with the Service Directorate about ways professional societies and the Service can collaborate to share scientific information, promote professional development, and encourage Service members and participation in professional societies. Discussions will be informed by findings and recommendations that will be produced from a yearlong evaluation that will be conducted jointly by the Service and TWS in FY2006 using an Intergovernmental Personnel Act (IPA) position.

#### ***Strategy 2: Build additional science infrastructure***

The Office of the Science Advisor will continue to work with the Service Directorate, Science Committee, Directorate Oversight Council and external science partners, particularly USGS, to develop and maintain the science infrastructure it needs to be an effective science-based organization. Attention will focus on maintaining the additional infrastructure added in FY2006 to: 1) meet expectations and directives from Congress, OMB, and DOI concerning the Data Quality Act, peer review, scientific conduct and data stewardship; and 2) enhance the Service's scientific competencies, capacities, practices, relationships and interactions. Much of these activities will continue to fall under the purview of the Science Committee, Directorate Oversight Council and National Data Steward.

In addition, the Office of the Science Advisor will continue to work closely with the National Conservation Training Center to ensure that the two communities of practice established in FY 2006 prove effective in assisting the Service in: 1) developing and maintaining subject matter expertise and mastery among its employee; 2) sharing knowledge and expertise between Service scientists and Service offices; and 3) developing an overall Service approach to knowledge preservation and knowledge management.

Similarly, the Office of the Science Advisor will continue to work closely with USGS to ensure that the adaptive management consultancies established with additional appropriations in FY2006 prove effective in: 1) providing the Service with additional expertise in adaptive management beyond levels that currently reside in the Service; 2) assisting the Service with managing trust species, such as waterfowl, wetlands and other aquatic habitats, and interjurisdictional fishes; and 3) assisting USGS and Service scientists in focusing their research and investigations on the most important management issues.

### **Strategy 3: Build key partnerships**

Building key partnerships will continue to be essential to the success of the Office of the Science Advisor and to the overall ability of the Service to maintain its leadership as a science-based conservation organization and to accomplish its mission. Attention will focus on maintaining existing science partnerships that have proven productive and beneficial, like those with USGS, the International Association of Fish and Wildlife Agencies and their member states, The Wildlife Society, American Fisheries Society, NatureServe, Ecological Society of America, American Museum of Natural History, American Zoological Association and other federal agencies, especially those in the Departments of Defense, Commerce and Agriculture.

Special efforts will be made to solidify and expand partnerships with other agencies and professional organizations whose missions and capabilities complement those of the Service, like the Forest Service, Environmental Protection Agency, and Department of Agriculture. Based on its experiences in FY2005, the Service believes that it can benefit from the special expertise of these partners in areas like earth observation imagery and remote sensing, Integrative Graduate Education and Research Traineeship Programs (IGERTs), and the Asian N5H1 virus and avian influenza.

### **Strategy 4: Conduct key special projects**

Special projects will continue to provide the Office of the Science Advisor and the Service as a whole with opportunities to engage in short-term (1-5 years) activities that are especially important in: 1) coalescing, synthesizing and developing new ideas and new approaches that hold promise for improving the Service's science foundations; 2) demonstrating the effectiveness and attractiveness of new ideas and new approaches that have been used successfully in localized parts of the Service or on broader scales outside the Service; and 3) assembling the expertise and personnel necessary to address an especially important conservation issue or challenge. Examples of these kinds of special projects include, respectively: 1) *the Future Challenges Initiative* and associated synthesis report that will recommend ways the Service and USGS can better position themselves to address the adverse effects of major environmental challenges on fish, wildlife and their habitats; 2) the National Ecological Assessment

Team [NEAT] and the team's development of its *Strategic Habitat Conservation* report and recommendations; 3) the role of the Service's Liaison to USGS in spearheading the Service's response to the Asian H5N1 virus and in coordinating activities across the Service and with USGS and DOI.

### **2006 Program Performance Estimates**

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The Science Excellence Initiative will continue to focus on its three goals and four implementation strategies in FY2006. Noteworthy activities are highlighted below for each of the four implementation strategies.

#### **Strategy 1: Assess FWS's scientific foundations**

The Service will use the results obtained from the joint FWS-USGS assessment of Service science capacity to help it meet each of the three Science Excellence goals identified in the Program Overview section. Specifically, the Service plans to gather detailed information about specific gaps that exist in its science competencies, capacities, practices, relationships and interactions, and then prioritize these needs and determine how best to close those gaps. The Science Advisor anticipates working with the Service Science Committee and the Directorate Oversight Council, and most likely with USGS's Policy Analysis and Science Assistance Branch at Fort Collins, Colorado, to involve all levels of the Service in these evaluations. This emphasis on identifying and then narrowing gaps complements several operational goals and critical success factors of the National Conservation Training Center, specifically NCTC's efforts to reduce competency gaps in the knowledge, skills and abilities of Service personnel.

The Office of the Science Advisor will also work closely with the Science Committee and Directorate Oversight Council to ensure the Service maintains sufficient scientific foundations. Specifically, the Science Advisor, Committee and Council will formulate recommendations for the Director's consideration concerning: 1) the kinds of policies, processes and other infrastructural components the Service needs to encourage its scientists to publish and disseminate the results of their scientific investigations and management activities; and 2) the kinds of review processes and approval processes the Service needs to expedite publication of important scientific information. The National Data Steward will play an important role in integrating these activities with similar concerns that stem from requirements of the Data Quality Act, OMB's Peer Review Bulletin, and OMB's and DOI's expectations concerning data stewardship in general.

In addition, the Office of the Science Advisor and his counterparts at USGS will work with The Wildlife Society to assess how professional societies, particularly The Wildlife Society, the Service, and USGS can benefit from greater membership and participation of Service scientists and managers in professional societies. Employees will be surveyed to identify: 1) ways of encouraging and facilitating membership and participation, and for encouraging publication, presentation and dissemination of scientific studies; and 2) ways professional societies can assist Service scientists and managers with professional development, training and possibly with certification.

Information generated from these three critically important activities will be channeled into planning and budgeting processes within Service programs to create additional organizational capacity to generate and disseminate scientific information that the Service and its partners need to fulfill their conservation missions. Results of these activities will also inform Regional executives and program executives and enable them to work together within and across Regions and programs to narrow the science gaps that affect Service operations most significantly. In addition, the information will enable the Service and USGS to use their science capabilities more effectively and efficiently by developing complementary capabilities.

Activities in each of these work areas will yield information that will assist the Service in measuring performance and operational needs, and in integrating performance and budget. The activities will also assist the Service with strategic planning, priority setting, employee development and management, budget formulation, and most importantly, management and conservation of fish and wildlife on-the-ground.

**Strategy 2: Build additional science infrastructure**

The Service plans to expand its science infrastructure in FY2006 to satisfy increased expectations and directives from Congress, OMB, and DOI, and to enhance the Service's science competencies, capacities, practices, relationships and interactions. Two specific actions, namely creation of a National Data Steward position and greater reliance on the Service's Science Committee and the Directorate Oversight Council, were described in the discussion associated with Strategy 1 above and in the text box at the beginning of the Program Overview section.

In addition, the Office of the Science Advisor and the National Conservation Training Center will collaborate to establish or "stand up" two communities of practice in FY2006, using \$143,000 appropriated for this purpose. These efforts will flow from consultations and careful planning conducted in FY2005, as described in detail later under Strategy 2 in the 2005 Program Performance Accomplishments section. Attention will focus initially on standing up a community of practice among Service biologists involved in structured decision support. Preparations will be completed to: 1) identify practitioners and subject matter experts and masters; 2) sanction the community as an officially-approved organizational entity; 3) encourage and empower members of the community to actively participate in it; 4) support the community with special IT systems and management assistance that will facilitate information exchanges and development of subject matter expertise and mastery; and 5) empower the community to select leaders and develop plans to share information, enhance subject expertise and mastery, and recruit additional Service employees to the community. Information gained from these processes will be used later in FY2006 to stand up a second community of practice among practitioners, experts and masters in a second subject yet to be decided.

In addition, the Office of the Science Advisor will work with USGS to establish consultancies that will expand the capacity of both bureaus to apply adaptive management principles to critically important fish and wildlife issues, using \$150,000 that Congress specifically appropriated for this purpose. Consultancies will enable Service scientists and managers to access specialized scientific expertise that resides with organizational units of the Biological Resources Division of USGS, specifically at its Research Centers and its Cooperative Research Units, to complement or supplement scientific expertise and management expertise that resides within the Service. Attention will focus on linking experts in adaptive resource management to address complex resource challenges, particularly ones that involve trust species, such as migratory birds, wetlands, interjurisdictional fishes and threatened and endangered species. The Service intends to use the funds appropriated by Congress to establish one consultancy with the Patuxent Wildlife Research Center to assist the Service and its conservation partners in managing migratory waterfowl, upland game birds and song birds. Other scientists with special expertise in adaptive management will assist Regions 3 and 5 in their Adaptive Management Partnership project. In addition, the Service is exploring ways of establishing other consultancies to assist it and its conservation partners in restoring and creating wetlands, and restoring and recovering aquatic species, particularly interjurisdictional fishes. Priority is likely to be given to areas and resources devastated by hurricanes and other natural disasters that befell large areas of the United States in 2005, particularly along the Gulf of Mexico.

**Strategy 3: Build key partnerships**

The Office of the Science Advisor will continue to exercise leadership and work with the Service Directorate to build partnerships that strengthen and expand the Service's science capabilities and science

infrastructure. Partnerships will help the Service implement specific actions in: 1) the *Future Challenges Project* national synthesis report to be completed early in 2006; 2) the report that resulted from the joint FWS/USGS project that assessed the scientific capabilities and needs of the Service; 3) priorities of the new Service Director, including wetlands, aquatic habitats and state conservation plans; and 4) addressing the needs (e.g., climate change, conservation genetics, remote sensing) of the conservation community at large.

Emphasis will also be placed on working with The Wildlife Society to complete the assessment described under Strategy 1 immediately above. This assessment will shed important light on ways the activities and resources of professional societies can complement those of the Service, and *vice versa*.

The Office of the Science Advisor also plans on exploring opportunities to examine science needs identified in state comprehensive fish and wildlife management plans to identify needs common to several states and to the states and the Service. Identification of common needs and gaps in science competence, capacity, processes, relationships and interactions could enable the Service and its partners to determine how best to fill those gaps and address shared conservation goals and needs.

In addition, the Service will continue to use its partnerships with USGS, particularly with the Cooperative Research Units and Research Centers, and with the International Association of Fish and Wildlife Agencies, The Wildlife Society, American Fisheries Society, and Ecological Society of America to develop, access, and disseminate the science information and science tools needed to address regional and national resource challenges. This will include expanding science partnerships with the American Museum of Natural History, American Zoological Association, NatureServe and the Department of Defense to help meet pressing resource needs and issues. It will also include expanding the fruitful partnership among that Service, USGS and NASA that began in FY2005, as discussed in more detail under Strategy 3 in the 2005 Program Performance Accomplishments section, to apply earth observation imagery, sophisticated remote sensing tools, and associated modeling techniques to assist the Service and USGS in addressing high-priority resource issues, like the effects of reduced polar ice on polar bears and walrus, and to assist in recovering critically imperiled species, like the Ivory-billed Woodpecker in the Lower Mississippi Valley.

#### **Strategy 4: Conduct special projects**

The Service, in collaboration with USGS, will complete the second phase of their *Future Challenges Project* in FY2006. They will produce a report that will synthesize the results of four regional workshops, as discussed under Strategy 4 in the 2005 Program Performance Accomplishments section. The report will identify priority actions that the bureaus can take to make them more effective in dealing with the resource consequences of global climate change, bioengineering and biotechnology, increased water uses, and invasive species.

The Service, in an effort that will be led by the Office of the Science Advisor and will be coordinated carefully with USGS, will play an important role in our government's efforts to implement an early detection program for the Asian H5N1 virus in wild birds, as part of an international effort to combat avian influenza in humans. Former Director Steve Williams assigned management responsibility for the Service's avian influenza activities to the Office of the Science Advisor. His decision was later reaffirmed by his successor, current Director Dale Hall, who felt the Office of the Science Advisor (OSA) offered three distinct advantages over other management options:

- 1) Because OSA is part of the Directors Office and because the Science Advisor reports regularly and directly to the Director, placing responsibility for avian influenza in OSA provides the Service with maximum flexibility to respond appropriately to the Asian H5N1 virus and potentially to disease(s) that could develop in birds and other species, including humans. While Service efforts are currently

focused on early detection of the virus in wild birds, primarily in Alaska, future efforts could involve other activities, species, locations and partners, particularly if the virus is detected in wild birds or captive birds, if it spreads to other species, or if species exhibit clinical signs of disease. Should any of these circumstances occur, the Directors Office will require maximum flexibility to use resources at its disposal to respond as directed by the Administration.

- 2) The Office of the Science Advisor provides an independent and objective capacity to develop, coordinate and manage a Service response that could involve many programs. While current early detection activities are being implemented largely by the Migratory Bird program and National Wildlife Refuge System, future activities could involve other Service programs, particularly if the virus is detected and/or disease ensues. Other Service programs would likely include Law Enforcement, International Affairs, Federal Assistance and perhaps Fisheries and Habitat Conservation. Because of this potential for broad cross-program involvement and because of the potential for the Service's response to involve both its Regional Directors and its Assistant Directors, the Office of the Science Advisor provides a unique capacity to coordinate and manage internal efforts, as well as coordinate external activities involving other DOI bureaus, and other departments and bureaus.
- 3) Because the Service's early detection activities are being conducted in close partnership with the USGS and depend in large part on USGS's capabilities to assist the Service in designing and conducting monitoring programs, as well as in detecting the Asian H5N1 virus and clinical signs of disease, the Service and USGS benefit from former Director William's and Director Hall's decision to assign lead responsibility to the Office of the Science Advisor. The Science Advisor is directly responsible for the activities of the Service's Liaison to USGS. The Liaison is a senior executive who is housed at USGS's headquarters in Reston, Virginia, and who works with USGS's executive leadership team (ELT) and the Service's Directorate to ensure efficient and effective communication, coordination and partnership between the two bureaus. The Liaison is currently spending more than half his time on the Asian H5N1 virus, ensuring the two bureaus are unified in their approach and activities, and are contributing to the overall approach developed by the Administration.

In addition, the Office of the Science Advisor will work with USGS to help fund an adaptive management (AM) project involving National Wildlife Refuges in Regions 3 and 5, using \$200,000 that Congress appropriated for this demonstration project. The National Wildlife Refuge System and USGS will provide additional funding, bringing anticipated FY2006 expenditures for this project to \$1,650,000. This AM project will focus on wetland drawdowns and their effects on waterbirds, and on prescribed burning and its effects on vegetation and waterbirds. The Service and USGS will use information generated from this study to adjust refuge management plans and guide operational activities, as well as to design additional studies and monitoring programs that will further improve refuge operations in future years. This approach is a unique integration of biological research and monitoring with operational planning and management at multiple refuges across two Service regions to optimize species and habitat management and to integrate on-refuge management goals with larger landscape management goals.

In FY2006, the Office of the Science Advisor will continue to provide the executive leadership needed to ensure that USGS's Science Support Program (SSP) addresses the Service's highest priority research needs and produces results that meet the Service's science needs, nationally and regionally. The Science Advisor will also evaluate the Service's use of the *Fish and Wildlife Information Needs System* (FWINS) to ensure the system is performing well in tracking, managing and completing funded projects and that project deliverables are helping the Service meet its resource management responsibilities. In a parallel initiative, the Science Advisor will confer with the Service Directorate to determine their interests in exploring alternative ways of allocating and using SSP funds. Since the program's inception, funds have been divided equally among the Service's regions and applied to each region's priority needs. In

addition, the Service's Liaison to USGS will continue working with the executive leadership of USGS to help ensure that science partnerships and base research funds available to USGS are effective in addressing resource issues of greatest importance to the Service and conservation community as a whole. Attention will focus on working with USGS to expand the capabilities of both bureaus in adaptive resource management, resource monitoring and assessment, resource modeling, and decision-support systems.

Also, as explained in detail in the discussion of Strategy 4 in the 2005 Program Performance Accomplishments section, the Science Advisor will work with the National Ecological Assessment Team (NEAT) to prepare a final detailed report that will describe a national approach to eco-regional planning, conservation action and assessment. He will work with the team to present their findings and recommendations to the Directorate. If adopted, the NEAT's recommendations will significantly change how the Service engages in biological planning and biological assessments, and allocates its resources.

### **2005 Program Performance Estimates**

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The Service's Science Excellence Initiative focused on its three goals and four implementation strategies in FY2005, and enjoyed many impressive successes. Noteworthy accomplishments are summarized below for each of the four implementation strategies.

#### **Strategy 1: Assess FWS's scientific foundations**

Efforts focused on three important projects, the first of which was completing the assessment of Service science capacity that began in FY2004 with assistance from the U.S. Geological Survey. The full study is available online at <http://www.fort.usgs.gov/products/publications/21528/21528.pdf>.

The second important project to enhance the Service's capacity to assess its scientific foundations was to empower and enable the Service's Science Committee and a Directorate Oversight Council to help identify gaps and needs associated with each of the three key goals of the Science Excellence Initiative. This was particularly important to examine our scientists' core competencies and the core capacities of our scientific facilities and institutions. The Science Committee and Directorate Oversight Council met twice in FY2005 and formed subgroups to conduct assessments and develop recommendations that together will provide the Director with means for:

- 1) ensuring the Service has the necessary processes and infrastructure to encourage its scientists to publish and otherwise disseminate the results of their scientific investigations and management activities, and to ensure an orderly and efficient process of reviewing and approving material for publication;
- 2) ensuring the Service has the processes and infrastructure needed to comply with OMB's peer review bulletin and to promote peer review broadly within the Service;
- 3) stepping-down the Department's code of scientific conduct to Service scientists and for ensuring that Service scientists and managers know what the code requires and conform fully with it; and
- 4) ensuring that during its workforce planning processes the Service takes into consideration the fundamental competencies its workforce must have and the fundamental capacities its science facilities must exhibit to maximize the effectiveness of its workforce.

#### **Strategy 2: Build additional science infrastructure**

Efforts in FY2005 focused on using the newly-established 13-person Service Science Committee and 5-person Directorate Oversight Council to address several high-priority science needs identified by Service

leadership. Director Williams charged the Committee and Council with developing clear policies that tier-off DOI policies and explain the Secretary's and Director's expectations in regard to: 1) peer review, 2) Scientific code of conduct, and 3) preparation and dissemination of professional publications. In addressing these charges and in discussing other high-priority science needs, the Science Committee and Directorate Oversight Councils began to promote scientific competence and scientific excellence throughout the Service. The Committee and Council provide basic infrastructures through which experienced scientists and accomplished managers can work together in helping the Service Directorate maintain the scientific foundation on which the Service bases its fish and wildlife management plans and management decisions. As discussed in the previous section, the Committee is using the talents and knowledge of its members and is reaching out to countless other scientists in the Service to identify and address the Service's most pressing science issues, needs and opportunities.

During the latter half of FY2005, the Office of the Science Advisor, with leadership and assistance from its National Conservation Training Center (NCTC), took important initial steps to establish communities of practice that will facilitate sharing and management of important scientific knowledge and will promote technical competency and subject-matter mastery among Service scientists. Consultation with internationally-recognized experts in knowledge management from IBM Corporation helped senior Service managers in the Office of the Science Advisor and at NCTC identify steps the Service needed to take to "stand-up" and fledge communities of practice. Subsequent discussions among these Service managers lead to the decision that the Service would begin by standing-up a community of practice among Service biologists involved in structured decision support. These managers also agreed to sponsor a workshop in June 2005 to bring together Service experts in structured decision support, as part of an overall Service effort to promote use of decision support systems and to assist in standing-up the community of practice. In addition, these managers agreed to stand-up at least one other community of practice, possibly among the Service's conservation geneticists or its toxicologists. Late in FY2005, Directorate member and their deputies expressed keen interest in standing-up other communities of practice, particularly among professionals engaged in workforce engineering and outsourcing, and in fish passage and fishway engineering. Because of leadership provided by the Office of the Science Advisor and by NCTC, the Service took major strides forward in FY2005 in building important infrastructures to assist in managing and disseminating scientific knowledge and promoting mastery of scientific subjects, as well as several administrative subjects.

Also, the Science Advisor and National Research Coordinator continued to work closely with their counterparts in USGS to ensure that research funds available through USGS's Science Support Program (SSP) were directed to the highest-priority needs of the Service and generated information that could be readily applied to conservation issues. The Service implemented an automated tracking system, called the *Fish and Wildlife Information Needs* system or *FWIN*, to monitor progress on research projects funded with SSP appropriations.

### **Strategy 3: Build key partnerships**

The FWS Director, his Science Advisor and the Liaison to USGS continued to meet monthly with their counterparts in USGS, as well as with key non-government organizations, to reinvigorate old partnerships and create new ones. The partnership between the Directors and senior executives of the Service and USGS that began in FY2004 grew significantly and fostered an atmosphere of greater collaboration and congeniality between the employees of the two bureaus. As a result, interactions between managers and scientists within and between the bureaus increased significantly.

Additional science partnerships with The Wildlife Society (TWS) and International Association of Fish and Wildlife Agencies that came to fruition via formal memoranda of agreement in FY2004 enabled these NGOs and the Service to share science information and data more readily in FY2005. An Intergovernmental Personnel Act (IPA) position between the Service and TWS was established in the



final quarter of FY2005. The Service employee in this yearlong position will work closely with TWS and senior leaders in the Service and USGS to identify additional opportunities for all three organizations to benefit from increased membership and participation of federal scientists in the activities of professional societies and similar organizations.

The Service continued to expand relationships with Cooperative Research Units and Cooperative Ecosystem Study Units in FY2005. The Service is now a signatory to 21 CRUs (a 40% increase from FY2002) and 6 CESUs (more than a 100% increase from FY2002), providing the Service with additional mechanisms for commissioning mission-critical research and obtaining information needed by its operational managers. In addition, the Service continued to work closely with the American Museum of Natural History, American Zoological Association, NatureServe and the Department of Defense to exchange scientific information and identify specific ways employees at national, regional and field levels of these organizations can work together to conserve fish and wildlife more effectively.

An especially noteworthy partnership was established between the Service, USGS and the National Aeronautics and Space Administration (NASA). The bureaus agreed to share expertise, technology and information to improve conservation planning and assessment, and in particular, to conserve trust resources and imperiled species. Attention focused on facilitating recovery of Ivory-billed Woodpeckers in the Lower Mississippi Valley and helping scientists and resource managers understand how shrinking polar ice is affecting populations of polar bear and walrus in the Arctic. Preliminary plans were developed to apply earth observation imagery, remote sensing technology and associated modeling techniques in FY2006 to assist in conserving these species.

#### **Strategy 4: Conduct special projects**

In FY2005, the Office of the Science Advisor accepted lead responsibility within the Service for working with scientists and managers in the Service and USGS, and with other government agencies to develop and begin implementing a strategy for early detection of Asian H5N1 virus in wild birds. The Office of the Science Advisor, Migratory Bird program and National Wildlife Refuge System (NWRS) will participate in an extensive early detection program that will involve USGS in collecting wild birds and analyzing them for the Asian H5N1 virus and clinical signs of infection and disease.

Activities of the Migratory Bird program and NWRS will be integrated and, in some situations, indistinguishable on-the-ground. A general description of duties and responsibilities follows.

The Office of the Science Advisor, as described in greater detail in our response to the question above, will:

- Represent the Directors Office in internal and external activities involving the Asian H5N1 virus, which includes coordination and communication with the Department of the Interior, and representation and involvement with the Department of Homeland Security.
- Ensure that the Office of the Secretary is regularly informed of the results of early detection activities conducted jointly by FWS and USGS.
- Employ an adaptive framework in responding to needs associated with the Asian H5N1 virus, including:
  - Coordinating design of early detection activities within the Service and with USGS.
  - Securing funding and other resources needed to support early detection activities.
  - Helping Regional personnel implement early detection activities.
  - Reporting results of early detection activities and reassessing appropriateness of monitoring activities.
  - Advising the Director concerning needs for additional FWS capabilities and activities with respect to the Asian H5N1 virus.

The Migratory Bird Program will:

- Assist Regional Directors in administering the component of the early detection program that involves determining morbidity and mortality of wild birds, by:
  - Ensuring coordination and communication with affected and involved Tribes, and providing funding to support their involvement.
  - Ensuring coordination and communication with affected and involved states, and providing funding to support their involvement.
- Assist in capturing and sampling wild birds.
- Assist in examining hunter-taken birds and collecting samples for laboratory analysis.
- Assist in examining birds taken by subsistence hunters and in collecting samples for laboratory analysis.

The National Wildlife Refuge System will:

- Participate in looking for and collecting diseased and dead wild birds.
- Assist in capturing and sampling wild birds.
- Assist in examining hunter-taken birds and collecting samples for laboratory analysis.
- Assist in examining birds taken by subsistence hunters and in collecting samples for laboratory analysis.

Following-up on actions begun in FY2004, the FWS and USGS jointly sponsored symposia in Denver, Anchorage, Atlanta and Sacramento in FY2005, as part of the *Future Science Challenges Initiative*, to identify specific actions the bureaus could take to better anticipate and address major challenge to fish and wildlife managers over the next 15-20 years. Four challenges were addressed: global climate change, bioengineering and biotechnology, the effects of increased water use on fish and wildlife, and invasive species. The Service and Survey collaborated to produce four reports that identify the findings of each workshop and offer recommendations about management actions and science activities, particularly research, the bureaus could undertake to address these topics.

In addition, the Service and USGS collaborated to build an extensive database, called the *Fish and Wildlife Information Needs system* (FWIN), that houses information about the Service's highest-priority research needs, nationally and regionally.

Also in FY2005, the Science Advisor continued to lead a group of talented scientists and managers from the Service and USGS, called the National Ecological Assessment Team (NEAT), in developing a national approach to eco-regional planning, conservation action and assessment. The NEAT team prepared a detailed draft report that presents its approach for strategic habitat conservation. The NEAT report will be completed by mid-2006 and will be presented to the Service Directorate and USGS Executive Leadership Team for adoption as the preferred approach for effective biological planning and assessment, and for routine use in generating and applying biological information in fulfillment of the shared conservation missions of both bureaus.

## Program Performance Overview

<b>End Outcome Goal 4.2: Serving Communities.</b> Advance Knowledge Through Scientific Leadership
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<b>End Outcome Measures</b>	<b>2005 Plan</b>	<b>2005 Actual</b>	<b>Change from 2005 Plan</b>	<b>2006 Enacted</b>	<b>2006 Change from 2005 Actual</b>	<b>2007 Request</b>	<b>2007 Change from 2006</b>
Soundness of methodology, accuracy, and reliability of science, as measured by % of employees in scientific positions who publish scientific findings. <sup>1</sup> [Target = 25%]	n/a	11% 496/4435	n/a	12.1% <sup>2</sup> 537/4435	1.1% +(537-496)	12.1% 41/4435	0

<sup>1</sup> Baseline data for "FY2005 Actual" came from the *Web of Science*, as reported in a survey completed jointly by the Service and USGS in late in FY2005 (Citation: *Quantity, Quality, and Support for Research in the U.S. Fish and Wildlife Service: An Organizational Overview*. USGS Open-File Report 2005-391. 173 p.)

<sup>2</sup> The Service Science Committee and the Directorate Oversight Council are expected to recommend to the Service Directorate new policies and mechanisms that will encourage employees to publish more. As a result, we anticipate a net gain of 1.1% in the percentage of FWS employees who publish. Additional resources are required to meet the target of 25%.



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## Program Performance Overview

End Outcome Goal 4.2: Serving Communities. Advance Knowledge Through Scientific Leadership							
<i>End Outcome Measures</i>	2005 Plan	2005 Actual	Change from 2005 Plan	2006 Enacted	2006 Change from 2005 Actual	2007 Request	2007 Change from 2006
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Program Element		FY 2005 Actual	FY 2006 Enacted	FY 2007			Change From 2006 (+/-)
				Fixed Costs & Related Changes (+/-)	Program Changes (+/-)	Budget Request	
Avian Flu	\$(000) FTE		7,398 30			7,398 30	

### Program Overview

Avian influenza viruses are naturally associated with wild birds, especially migratory waterfowl and shorebirds. Although movement of avian influenza viruses from wild birds to domestic birds or mammals is not a common event, when it does occur, it can result in evolution of a “new” virus adapted to a new host population. Such “new” viruses can cause disease in the host population, including humans.

Since 1997, a highly pathogenic Asian strain of H5N1 avian influenza has become endemic in poultry flocks in Southeast Asia and has spread to Central Asia and Eastern Europe. A worrisome feature of this highly pathogenic strain of avian influenza is its ability to infect and cause illness or death in wild birds and humans. As of December 17, 2005, the virus is known to have infected 138 people and caused 71 deaths. Although the virus has not yet shown an ability to transmit efficiently from one human to another, there is concern that it will acquire this ability through mutation or genetic exchange.

Because of the potential for wild birds to carry and transmit the Asian H5N1 virus, Congress provided \$7,398,000 to the Service in FY2006 to implement an early detection program. Specifically, the Service will implement elements of the interagency strategy for surveillance and early detection of Asian H5N1 virus in wild migratory birds for which the Service is responsible. Those elements include sampling by Service and USGS biologists of live-captured, apparently healthy migratory birds to detect the presence of Asian H5N1 avian influenza. This effort will target bird species in North American that represent the highest risk of being exposed to or infected with Asian H5N1 virus because of their migratory movement patterns. This includes birds that migrate directly between Asia and North America, and birds that may be in contact with species from areas in Asia with reported disease outbreaks in wild birds, focusing intensively on Alaska, the Pacific Flyway, and Oceania; it also includes conducting general surveillance for highly pathogen avian influenza in mortality events of high-priority (i.e., most likely) species throughout the United States.

In addition, the Service will support state fish and wildlife agencies and Native American tribes involved in collecting samples from priority bird species at hunter check stations in areas where priority migratory bird populations stage during migration or where they overwinter. Sampling will also occur in birds taken in subsistence hunting by Alaska Natives. Samples will be analyzed and stored at USGS facilities, notably the National Wildlife Health Center in Madison, Wisconsin. The Avian Flu funds and FTE for FY 2006 and FY 2007 will be managed and allocated separately from the Science Excellence Initiative. Funds and FTE will be utilized by regional program managers.